

*SOLANUM VIARUM* AND *S. TAMPICENSE*  
(SOLANACEAE): TWO WEEDY SPECIES NEW  
TO FLORIDA AND THE UNITED STATES

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ABSTRACT

Two Solanaceae, *Solanum viarum*, native to southern Brazil, Paraguay, and northern Argentina, and *S. tampicense*, native to the West Indies and Mexico to Costa Rica, are here reported for Florida and the contiguous United States. *Solanum viarum* has become a noxious weed in Florida in pasture land and *S. tampicense* has the potential to become one in wet forested habitats. A key to *S. tampicense*, *S. viarum*, and related species and the nomenclature of *S. tampicense* is given.

RESUMEN

Dos Solanaceae, *Solanum viarum* nativa del sur de Brasil, Paraguay y norte de Argentina, y *S. tampicense* nativa de las Indias Occidentales y de México a Costa Rica, se citan aquí para Florida y los Estados contiguos. *Solanum viarum* se ha convertido en una mala hierba nociva en los pastos de Florida y *S. tampicense* tiene el potencial de convertirse en otra en los hábitats forestales húmedos. Se ofrece una clave para *S. tampicense*, *S. viarum* y especies relacionadas así como la nomenclatura de *S. tampicense*.

Two *Solanum* (Solanaceae) species, *S. viarum* Dunal and *S. tampicense* Dunal are here reported as naturalized in Florida and the contiguous United States.

*Solanum viarum* is native to southern Brazil, Paraguay, and northern Argentina

but is naturalized in the New World outside its natural range in the West Indies, Mexico, and now, Florida. It is also naturalized in the Old World in Africa and India. In India, it is sometimes known under the incorrect name *S. khasianum* C.B. Clarke, which is *S. aculeatissimum* Jacq., a species perhaps also introduced from South America. *Solanum khasianum* var. *chatterjeeanum* Sen Gupta, also of India, is a synonym of *S. viarum* (Babu 1971, Nee 1991).

*Solanum viarum* was apparently first collected in Florida and the contiguous United States in Glades County in January 1988 and subsequently in Okeechobee and Polk counties the same year. The plants were found growing in pastures, along fence rows, and in other open disturbed sites (Fig. 1). The species is aggressive, forming near monocultures in some situations. Based on reports by IFAS County Extension Agents, an estimated 150,000 acres in southern Florida are infested with *S. viarum*. The species is typically found in soils belonging to the order of Spodosols (nearly level, somewhat poorly drained soils with a spodic horizon 1–2 m below the soil) in Florida. When growing in pasture land, the foliage is generally not grazed by cattle, probably because it is heavily armed with spines and glandular hairs although cattle will sometimes eat the unpalatable (bitter) fruit which contains the glycoalkaloid solasodine (Mullahey et al. 1993). The species has rapidly become a noxious, upland weed in many places, although its opportunistic adaptations may restrict it to disturbed areas. The rapid spread of the species in Florida is apparently due to it being transported from pasture to pasture in hay and farm machinery.

### Description of *Solanum viarum*

Subshrubs to 1 m tall; stems much branched at and above the base, viscid-pubescent with a mixture of stellate trichomes and simple, glandular and nonglandular trichomes, and with straight, laterally compressed, broad-based spines to 2 cm long. Leaf blades ovate-triangular, 8–12(15) cm long, 5–10(12) cm wide, sinuate-lobed, the lobes subobtuse or subacute, both surfaces viscid-pubescent with glandular and non-glandular trichomes mixed with stellate trichomes, armed on the midrib and minor veins with straight spines; petioles 2–9 cm long. Inflorescences axillary, of 1–3 fascicles of 1- to 3-flowered cymes; calyx 4–7 mm long, 5-lobed to about the middle, often with spines, the lobes triangular-ovate, 3–6 mm long; corolla 1.5–2.7 cm in diameter, white, deeply 5-lobed, the lobes broadly lanceolate, 8–12 mm long, recurved, apex acute to mucronate, outer surface pubescent with glandular and nonglandular trichomes; filaments ca 1 mm long; anthers linear-lanceolate, 8–10 mm long; style 1, exceeding the stamens at maturity; stigma capitate, ovary globose. Fruits globose, (1.5)2–3 cm in diameter, smooth, glabrous, the immature fruit green with white mottling, yellow at maturity; peduncle stout, 1.5–2 cm long; seeds numerous, compressed, ovate-pyriform, ca 2 mm long, surface brown, very minutely rugulose. (Figs. 1 & 2).



FIG. 1. *Solanum viarum* Dunal. Top: large population in cow yard (Hardee Co., Florida). Bottom: habit.

Specimens examined. FLORIDA. Desoto Co.: 0.5 mi E of Ft. Ogden, E of FLA 17 on FLA 761, 1 Oct 1992, *DeLaney 1921* (USF). Glades Co.: N side of US 27, 2 mi W of FLA 720, ca 4 mi W of the Clewston K-Mart, T43S, R33E, Sect. 11, 7 Jan 1988, *Orsenigo s.n.* (FLAS); N side of US 27, 2 mi W of FLA 720, ca 4 mi W of the Clewston K-Mart, T43S, R33E, Sect. 11, 8 Mar



FIG. 2 *Solanum viarum* Dunal. Top: flowers. Bottom: immature fruit.

1989, *Orsenigo s.n.* (FLAS). Hardee Co.: 1 mi N on SR 636 (Steve Roberts Special) on Kelly Roberts NE, T34S, R26E, Sect. 24, 6 May 1989, *DeLaney 1912* (USF). Hendry Co.: FLA 29, Felda, 6 Dec 1990, *Townsend s.n.* (FLAS). Highlands Co.: Arbuckle Creek Road, ca 8 mi E of SR 17A, T34S, R30E, Sect. 27, 6 May 1989, *DeLaney 1913* (USF); SR 66, ca 1 mi W of Sparta Road,

T35S, R29E, Sect. 30, 6 May 1989, *DeLaney 1914* (USF). Lee Co.: along N side of Colonial Drive ca 1/2 mi E of I-75, 8 May 1992, *Beckner & Pagels 2705* (USF). Manatee Co.: along SR 62, ca 1 mi W of Duette, T33S, R22E, Sect. 19, 5 May 1992, *DeLaney 1919* (USF). Marion Co.: ca 1 mi N of Lake Co. line on I-75 northbound, 9 Aug 1992, *DeLaney 1920* (USF). Okeechobee Co.: near Basinger Cemetery off Hwy 98, 27 May 1988, *DeLaney 1617* (USF). Polk Co.: Lake Marion Scrub, ca 2 mi E of Lake Marion, ca 6 mi E of Haines City, T28S, R28E, Sect. 11, 16 Jun 1988, *Hansen, Wunderlin, & DeLaney 11786* (USF). Sumter Co.: 606 Willis Street, Wildwood, 8 Jul 1991, *Henderson s.n.* (FLAS).

*Solanum tampicense* is another species that appears to be recently naturalized in Florida. It was first collected in a swamp in Charlotte County in 1983 and two recent collections confirm this species as naturalized along the banks of the Peace River in DeSoto County and Fisheating Creek in Highlands County. At the latter site, the species is abundant and forms an impenetrable thicket in some areas of the floodplain. *Solanum tampicense* sets abundant fruit in Florida and has a strong potential to become a noxious weed in wet forested habitats.

Coile (1993) briefly mentions *S. tampicense* as occurring in Florida using the name *S. houstonii*, an earlier name, but a later homonym of *S. houstonii* Martyn. The complex nomenclature of *S. tampicense* is as follows:

***Solanum tampicense*** Dunal, in de Candolle, Prodr. 13(1): 284. 1852. SYNTYPES: MEXICO. TAMAULIPAS: Tampico, *Berlandier 48* (G-DC, Morton photo 8443 not printed?, =IDC microfiche 800-61.2083:I.8); *Berlandier 115* (G-DC, =F photo 33952, =IDC microfiche 800-61.2083:I.8; ISOSYNTYPE: P!); *Berlandier 185* (G; ISOSYNTYPES: F!, TCD!).

*Solanum quercifolium* Miller, Gard. Dict. ed. 8, *Solanum* no. 16. 1768; non Linnaeus, Sp. Pl. 185. 1753. *Solanum houstonii* Dunal, Hist. Solan. 243. 1813; non *S. houstonii* Martyn, in Miller, Gard. Dict. ed. 9. 2: *Solanum* no. 91. 1807 (nom. illegit., based on *S. carolinense* "Mill," 1768). TYPE: MEXICO. VERACRUZ: *Houston s.n.* (BM, =XAL neg. 156!).

*Solanum tampicense* is similar to and sometimes confused with two other species, *S. adhaerens* Roemer & Schultes (syn.: *S. donnell-smithii* Coulter) and *S. lanceifolium*. Lawrence (1960) reported *S. donnell-smithii* Coulter, as having been "reintroduced" in 1958 from stock brought in from Costa Rica and cultivated as an ornamental in the Fort Lauderdale area. D'Arcy (1974), who considered *S. donnell-smithii* as synonymous with *S. lanceifolium* Jacq., cites Lawrence's report but did not see any Florida material for verification. From the geographic origin, this introduction was probably *S. adhaerens*, the oldest name for this common species of lowland Central America and northern South America, and often confused with the less weedy true *S. lanceifolium* Jacq. of the same region (Nee, 1993). *Solanum adhaerens* (sensu *S. lanceifolium*) is considered a noxious weed in many parts of its range (e.g. D'Arcy 1973, 1974; Proctor 1984).

### Description of *S. tampicense*

Scrambling shrubs to 5 m tall; stems sparsely stellate-pubescent, armed with recurved, laterally compressed, broad-based spines to 5 mm long. Leaf blades lanceolate to elliptic, 8–25 cm long, 2–7 cm wide, sinuate-lobed, sparsely

stellate-pubescent to glabrate, armed on the midrib and minor veins with recurved spines; petioles 1–3 cm long, sparsely stellate-pubescent and usually armed with recurved spines. Inflorescences axillary, (1)3- to 8-flowered umbelliform racemes; peduncles and pedicels 1–3 mm long; calyx 1–2 mm long, lobed to about the middle, often with spines; corolla white, 5–8 mm long, divided nearly to the base, sparsely pubescent on outer surface, the lobes often recurving; anthers slender, tapering to the apex, about as long as the corolla lobes; style 1, exceeding the stamens at maturity. Fruits globose, 6–10 mm in diameter, red, lustrous; seeds numerous, suborbicular, ca 2 mm long, compressed, yellowish.

Specimens examined. FLORIDA. **Charlotte Co.:** S of Punta Gorda, ca 0.4 mi W of SR 765, T42S, R23E, sect. 17, 1 Jun 1983, *Shuey 2550* (USF). **Desoto Co.:** ca 0.5 mi W of Arcadia and just N of Hwy 70, west bank of Peace River, T37S, R24E, Sect. 26, SE 1/4 of SE 1/4, 21 Dec 1991, *Mears s.n.* (USF). **Highlands Co.:** Fisheating Creek, S of SR 8, 21 Dec 1992, *DeLaney 1922* (NY, USF).

Among spiny *Solanum* in Florida, *Solanum viarum* and *S. tampicense* most closely resemble *S. capsicoides* All., *S. carolinense* L., *S. dimidiatum* Raf., *S. jamaicense* Miller, and *S. torvum* Sw. They may be distinguished by the following key:

- 1. Leaves sessile ..... *S. jamaicense*
- 1. Leaves petiolate.
  - 2. Leaves with simple trichomes; seeds winged ..... *S. capsicoides*
  - 2. Leaves with stellate or a mixture of stellate and simple trichomes; seeds not winged.
    - 3. Leaves a mixture of stellate trichomes and simple, glandular and nonglandular trichomes; plants viscid-pubescent to the touch ..... *S. viarum*
    - 3. Leaves with stellate trichomes only; plants not viscid-pubescent to the touch.
      - 4. Corolla lobed nearly to base, the lobes linear-lanceolate; fruit red, up to 1 cm in diameter ..... *S. tampicense*
      - 4. Corolla lobed 1/3–1/2 to base, the lobes deltoid; fruit yellow, over 1 cm in diameter.
        - 5. Tree or shrub; spines recurved ..... *S. torvum*
        - 5. Herb; spines straight or essentially so.
          - 6. Stellate trichomes on lower surface mostly 2- to 5-rayed; corolla 2–3 cm wide; calyx 5–7 mm long ..... *S. carolinense*
          - 6. Stellate trichomes on lower surface usually 6- to 8-rayed; corolla 3–4 cm wide; calyx 8–12 mm long ..... *S. dimidiatum*

#### ACKNOWLEDGMENT

We gratefully acknowledge Kent D. Perkins of the Florida Museum of Natural History (FLAS) for his assistance.

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